# C. E. WHITMORE.

## Flour and Middlings Purifiers.

No. 150,664. Patented May 5, 1874.

Fig. 1.

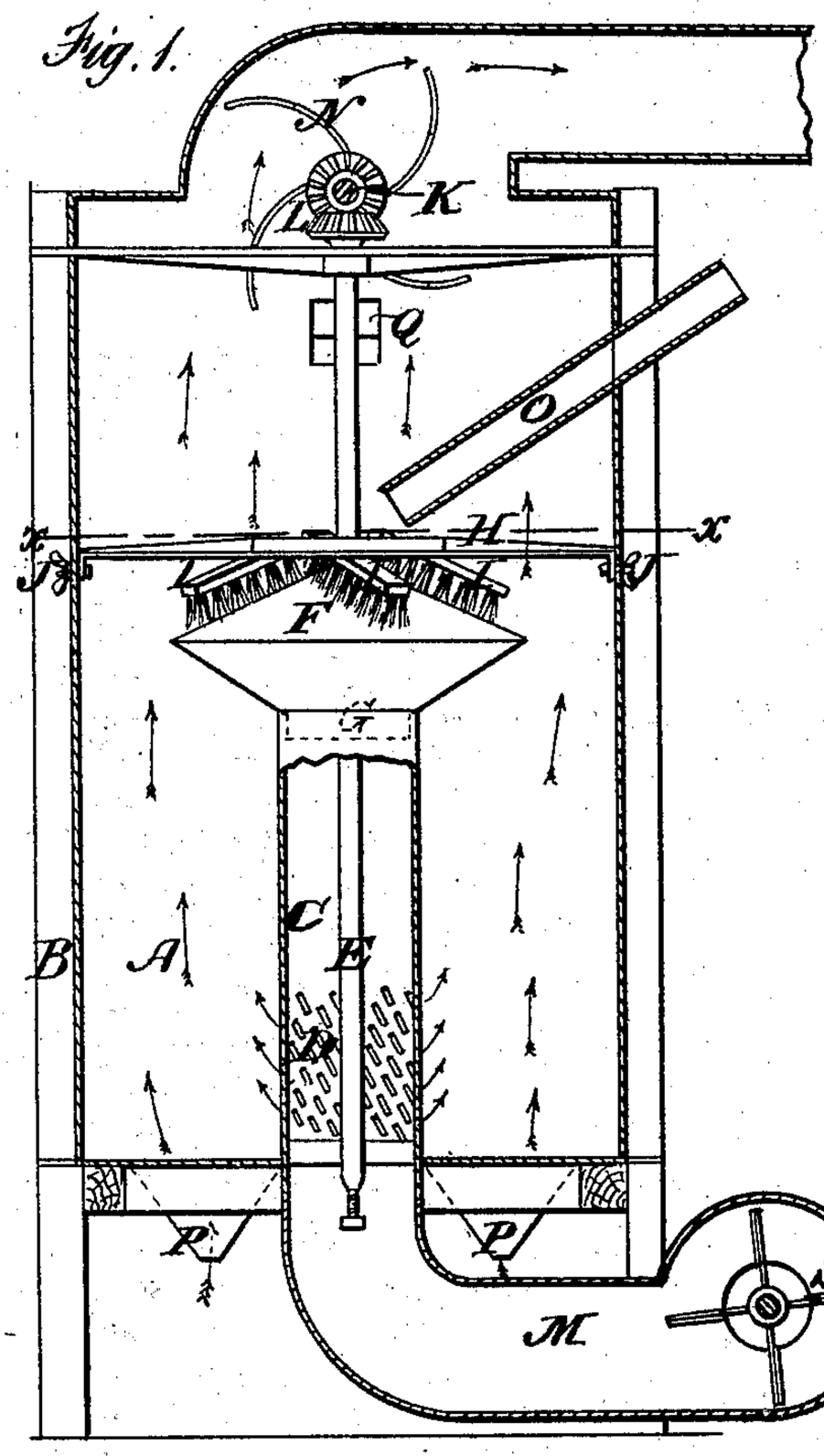



Fig. 2.

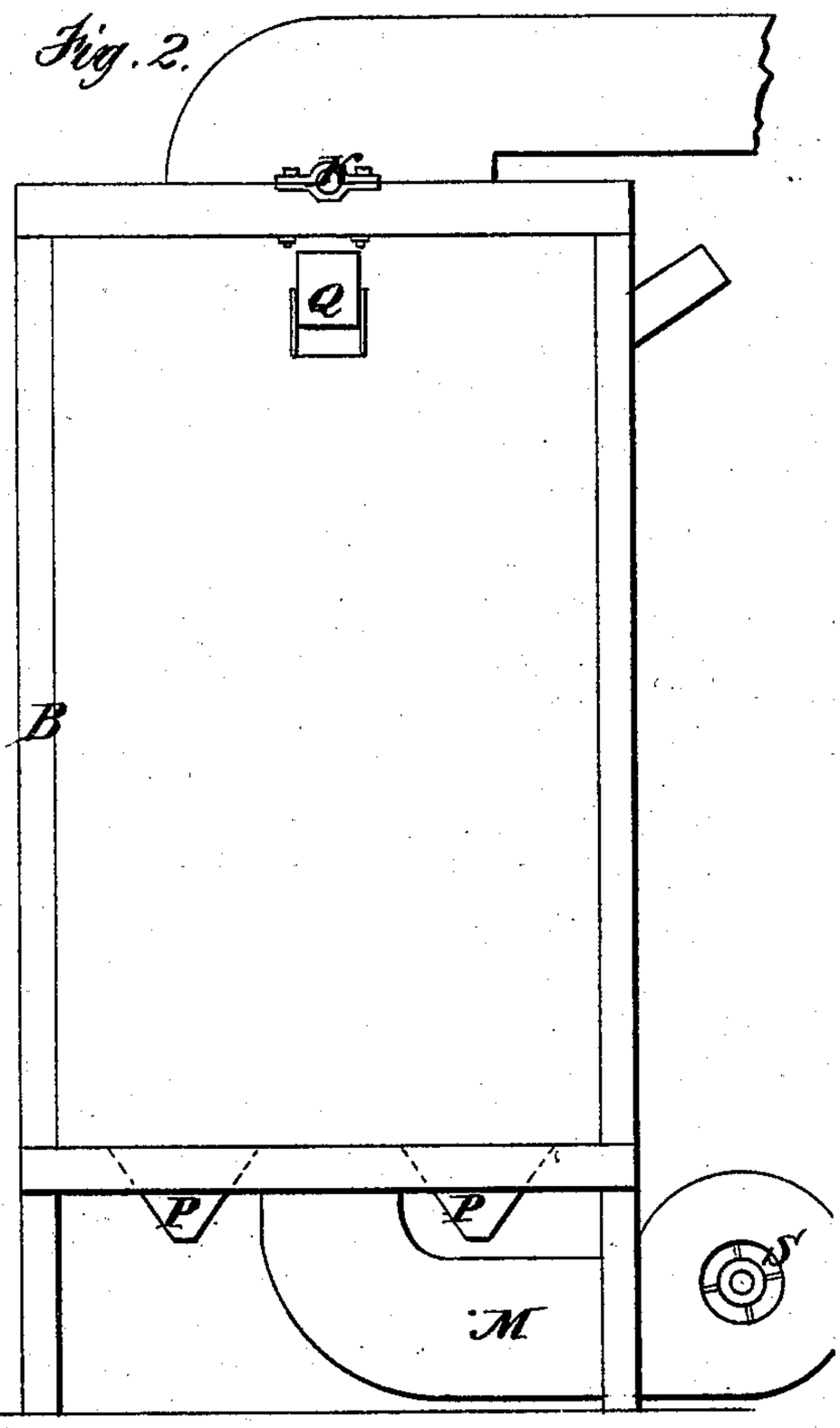



Fig. 3.

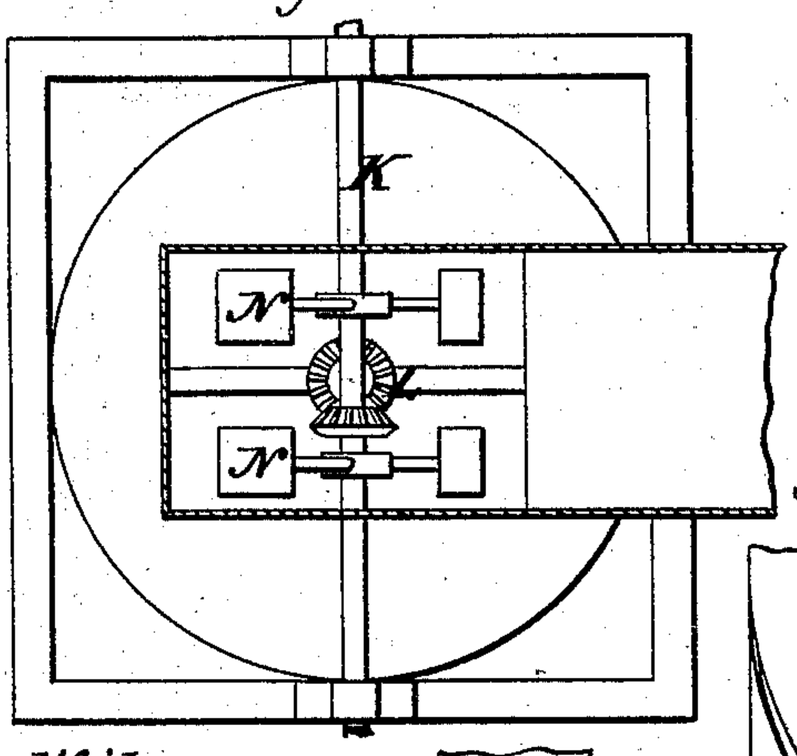



Fig. 4.

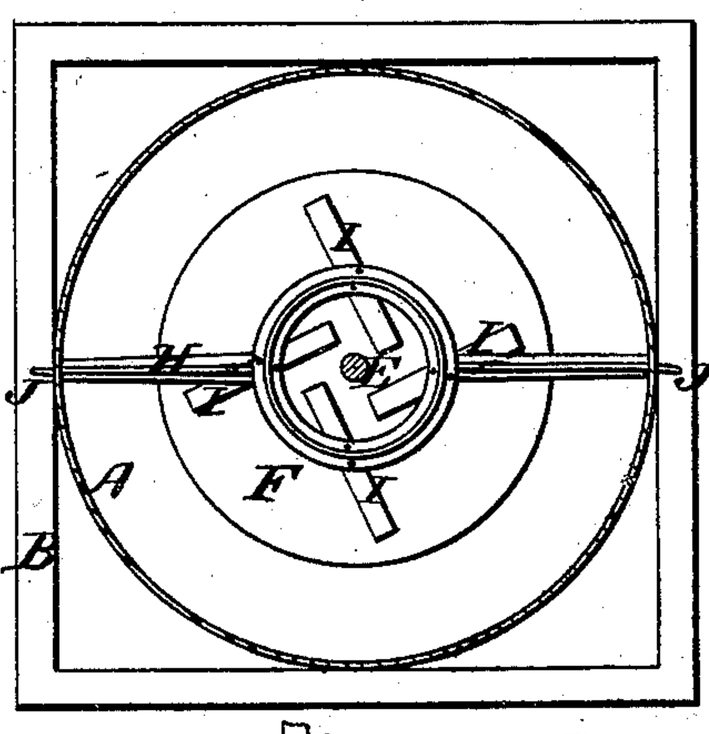
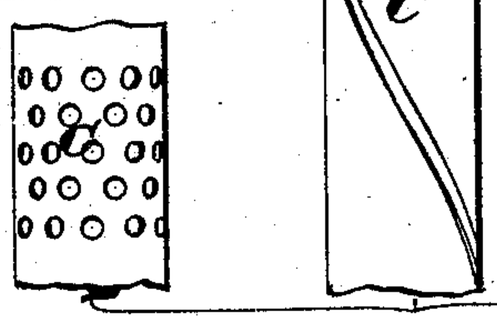
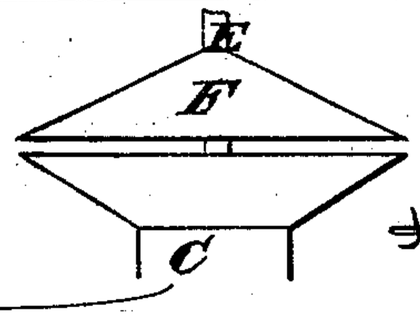



Fig. 5.




Witnesses.
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# UNITED STATES PATENT OFFICE.

CHARLES E. WHITMORE, OF QUINCY, ILLINOIS.

## IMPROVEMENT IN FLOUR AND MIDDLINGS PURIFIERS.

Specification forming part of Letters Patent No. **150,664**, dated May 5, 1874; application filed April 22, 1874.

*To all whom it may concern:*

Be it known that I, CHARLES EDWARD WHITMORE, of Quincy, in the county of Adams and State of Illinois, have invented an Improved Flour and Middlings Purifier; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a vertical section of the middlings-purifier; Fig. 2 is a side elevation of the same; Fig. 3 is a top-plan view; Fig. 4 is a transverse section taken in the plane of the line *x x*, Fig. 1; and Fig. 5 shows several modifications of the air-tube.

Similar letters of reference indicate corresponding parts in the several figures of the drawings.

My invention relates to that class of machines for purifying flour and middlings in which an air-blast, or a combined air-blast and air-exhaust, are employed to assist the other mechanism in effecting the purification of the middlings and flour, and in separating the fine from the coarse middlings.

The invention has for its object to improve the operation of this class of machines for the purpose of producing a more perfect purification of the middlings; and to this end it consists, first, in the employment of one or more brushes to sweep over the surface of a feed or distributing plate, so that the middlings, which are fed between them, shall be carried from the center to the circumference of the plate and thrown from the latter in a fine sheet or spray, in which condition they are subjected to the action of ascending currents of air to carry off the light adhesive particles before they can again come in contact with the middlings, and permit the latter to fall upon the bottom of the machine; secondly, in the employment of an air-blast or exhaust, or both combined, with brushes for treating the middlings as they are thrown from the distributing-plate; thirdly, in one or more upright tubes arranged within the casing of the machine beneath the distributing-plate, and provided with slots or perforations to direct the air-currents in contact with the sheet or spray of scattered middlings; lastly, in the combination of various parts, as I will presently describe.

In the accompanying drawings, A is an upright tube, of any desired form, mounted in a frame, B, and constituting the casing or trunk of the machine. C is a vertical tube or pipe arranged within the case A, and provided with a series of slots or perforations, D, of the requisite size and form, arranged in any suitable manner for discharging the air into the outer case. I preferably arrange these openings spirally around the tube, for the purpose of directing the air-currents upward as well as outward. Instead of perforating the tube, it may be formed with a series of longitudinal slits arranged parallel to or spirally around its axis, as preferred. More than one of these air-tubes may be employed of the same or varying lengths, and of uniform or different diameters. In most cases, however, one will be found sufficient. E is a vertical shaft extending through the air-tube C, with its bearings in the top and bottom cross-pieces, or other supports of the casing, and F is the feed or distributing plate, keyed to the shaft, so as to rest upon the top of the air-tube. I propose to construct this plate of any proper size and form; but in the drawings I have shown it with a slightly conical top, and a beveled under surface terminating in a central collar, G, to fit into the top of the air-tube. The plate may, however, be entirely disconnected from the tube, or simply rest upon it. H is a cross-bar arranged within the case A, immediately over the feed-plate, and I are brushes secured thereto, so as to bear upon the surface of the plate. The bar is adapted for vertical adjustment by means of the thumb-screws J, for the purpose of regulating the contact or bearing of the brushes upon the feed-plate. One or a number of brushes may be used, as preferred; but if only one is employed it should be made sufficiently large to extend around the top of the plate. The shaft E is driven from a counter-shaft, K, at or near the top of the case, by means of the beveled pinions L, so as to rotate the distributing-plate beneath the brushes. Instead of adapting the plate to revolve against the stationary brushes, the latter may be fastened to the shaft E, and rotate with it, while the plate, disconnected therefrom, remains stationary. M is an air-supply pipe connected to the tube C, for the

purpose of supplying air thereto from a blast-fan, S, or air-chamber. The pipe M is made flexible, by preference, but may be rigid, if desired. N is a suction-fan mounted upon the counter-shaft K, or upon a shaft disconnected from the machine. This fan is employed for carrying off the light particles of dust or fuzz from the middlings as they are thrown off by the distributing-plate. The pipe M from the blast-fan may be disconnected from the air-tube, or removed altogether, and a current of air drawn into such tube and through its perforations by the suction-fan.

When the machine is in operation the middlings to be purified are fed through the spout O onto the distributing-plate, and, as the latter revolves, pass between it and the brush or brushes. By this means they are freed from all particles of flour, fuzz, or bran adhering to them, and carried from the center to the circumference of the plate, and thrown in a fine sheet or spray into the case A. While in this scattered condition they are subjected to the action of the air from the tube C, which holds all the light particles in suspension until the air from the suction-fan N raises and carries them off in a suitable dust-room. The pure middlings fall to the bottom of the tube A, and are discharged through openings P therein, which openings also afford means for an additional supply of air to the suction-fan. Q are gates in the sides of the case for regulating the supply of air to the suction-fan.

While I prefer to use the blast and suction in combination, the same result, to a very great extent, is accomplished by the use of either independent of the other.

This machine may be used in connection with a reel-bolt or reciprocating sieve or bolt, or it may be used without them, as described.

I do not propose to effect a perfect separation of the fine from the coarse middlings without either of these bolts, but only to purify them thoroughly.

Having thus described my invention, what I claim is—

1. In a middlings-purifier, a feed or distributing plate and one or more brushes, arranged in a suitable case, through which an ascending current of air passes, for the purpose of scattering the middlings in a fine sheet or spray, and while in this condition separating them from the fine adhesive particles, substantially as described.

2. A perforated or slotted air-tube combined with a feed or distributing plate, substantially as described.

3. A perforated or slotted air-tube combined with a feed or distributing plate and one or more brushes, substantially as described.

4. A revolving feed or distributing plate and one or more brushes, in combination with a blast-fan, substantially as described, for the purpose specified.

5. A revolving feed or distributing plate and one or more brushes, in combination with an exhaust-fan, substantially as described, for the purpose specified.

6. A revolving feed-plate and one or more brushes combined with a blast-fan, and an exhaust fan, substantially as described, for the purpose specified.

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Witnesses:

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